Mech 200 – Classical Thermodynamics

Spring 2013

Instructor: Professor Brent C. (B.C.) Houchens
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Class Meets: 11:00 - 11:50 AM, Mon., Wed., Fri., 210 Herzstein

Text: *Thermodynamics: An Engineering Approach,* 6th ed., Cengel & Boles, McGraw-Hill, 2008. (or later)

Web Site: https://owlspace-ccm.rice.edu/portal

Grading: Homework – 15%, Exam 1 – 25%, Exam 2 – 30%, Final – 30%

minimum guaranteed grades will be assigned as follows:

98.5-100: A+	92-98.4: A	90-91.9: A-
87-89.9: B+	82-86.9: B	80-81.9: B-
77-79.9: C+	72-76.9: C	70-71.9: C-
67-69.9: D+	62-66.9: D	60-61.9: D-
below 60: F		

Homework: Homework is due at the beginning of class. Please put your name, the course number, and the homework set number on the top page and staple (**write neatly, on only one side of the page**). After an honest individual attempt, working in groups on homework is then encouraged, but **you must submit your own solution**. No late homework will be accepted. Homework should show clear logic. **Carry out solutions in variable form and, where applicable, substitute numerical values at the end**. Pay close attention to maintaining correct dimensions. **Box or underline the final answer or expression.**

Exams: There will be two exams, and a comprehensive final exam. Content builds throughout the duration of the course.

Objectives	Outcomes
Students should understand:	***Students completing the course should be able to:***
1: the states of matter and their related thermodynamic properties.	1a: determine state(s) and find associated thermodynamic properties from tables or constitutive equations (equations of state) for pure substances.
2: the concepts of work and heat transfer.	2a: describe how thermodynamic properties and work and heat transfer are related in various systems or control volumes, under a variety of assumptions.
3: the governing equations, including conservation of mass and the 1st and the 2nd Laws of Thermodynamics.	3a: explain the physical meaning of terms appearing in the most general, integral forms of the governing equations. 3b: simply the equations to algebraic forms using reasonable approximations.
4: the use of the governing equations for analyzing control mass and control volume problems.	4a: reduce the governing equations from their algebraic forms for the appropriate system or control volume by making relevant simplifications and approximations. 4b: solve the simplified system of governing equations with appropriate constitutive equations or thermodynamic property tables.
5: component efficiencies and maximum possible power cycle efficiencies.	5a: determine the isentropic, adiabatic efficiencies of compressors, pumps and turbines. 5b: determine the overall efficiencies of power cycles and related Carnot efficiencies.
6: constitutive equations describing the properties of non-reacting mixtures.	6a: determine the properties of mixtures of ideal gases and solve related problems. 6b: determine the properties of humid air mixtures and solve related problems.

Absence Policy: Absence during any scheduled exams must be approved at least 4 hours in advance via email to houchens@rice.edu, barring a documentable emergency.

Honor Code: Homework, projects and exams are subject to Rice's Honor Code.

Notice: Any student with a disability requiring accommodations in this course is encouraged to contact me after class or during office hours. Additionally, students should contact Disability Support Services in the Ley Student Center.